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church and public beneficences, in our increased regard for human life, we feel the effects of this energy, though we see it not. The social settlements of Owen and others were truly preliminary nineteenth century scientific experiments to test the strength of the law of love, and the amount of this energy needed to vivify and unify the social organism. Like thousands of scientific experiments before and since they partially failed, but their failures and successes have been recorded, so that succeeding experimenters might carry the inquiry to a successful issue.

The fetish of unbridled commercial competition which has too long lorded over us, is in many ways inimical to our highest interests. It can be a helpful servant if kept in subjection, it becomes a harsh tyrant if worshipped as a god. It can not retain *supremacy* alongside the gospel of peace and love. If so, the latter suffers or becomes effaced, and mankind becomes the loser.

If back of all our failures and achievements, our hopes and our disappointments, some great and desirable human goal is not to be attained, then in spite of the genuine pleasure that comes from discovery of new knowledge, man may well turn from his labors exclaiming, 'Vanity of vanities, all is vanity.' But I thank God that beautiful lives have lived and still live, and that imperfect though I may be, energy—inspiration, if you care so to call it—can be got by drawing supplies of like energy as theirs from the great fountain head that has energized them. The science of life, and the religion of life *may* dwell apart, but who knows whether, when our profound ignorance has been dispelled, it may not appear that both are linked together, and are governed by similar great laws that we are asked by observation and experiment to verify and to accept.

Illimitable fields of research still remain for us to enter; the masses of our fellows are eager to learn what fruits we gather and bring back. We can only afford then to be optimists, and to exclaim with Mackay:

Blessings on Science! When the earth seemed old,  
When Faith grew doting, and our reason cold,  
'Twas she discovered that the world was young,  
And taught a language to its lisping tongue.

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#### SCIENTIFIC BOOKS.

*Zoological Results based on Material from New Britain, New Guinea, Loyalty Islands and elsewhere collected during the Years 1895, 1896 and 1897.* By ARTHUR WILLEY. Part VI. (August, 1902). Cambridge (Eng.) University Press. Pp. 691-830, pls. 75-83.

The sixth instalment of Willey's 'Zoological Results' is devoted entirely to an account of the natural history of the pearly nautilus and is by Dr. Willey himself. The account opens with a personal narrative in which he relates, in addition to the many observations bearing directly on the problem of securing the eggs of the pearly nautilus, numerous incidents and occurrences that he met with while sojourning among the inhabitants of the Eastern Archipelago. This is followed by a detailed account of the pearly nautilus itself.

Many interesting and important observations on the natural history of this animal are here recorded. The natural coloration is such that, though the animal is a conspicuous object when in the hand, it is quickly lost sight of when dropped into the sea, a condition which has led Willey to believe that its coloration is of a protective character. Sexual dimorphism in *Nautilus* has long been known and is easily recognized even in the dead shells. Willey has brought to light the remarkable fact that while in *Nautilus pompilius* the males outnumber the females (150 to 66), in *N. macromphalus* the reverse seems to be true (10 to 16). No important information was obtained as to the way in which the

nautilus forms new chambers in its shell. The breathing of the animal is in striking contrast to that of many other cephalopods. In *Octopus*, for instance, the inflation and emptying of the respiratory cavity involves the combined action of the muscular mantle and the funnel; in *Nautilus* the operation is carried out exclusively by the funnel, the mantle being a thin membrane applied to the inner surface of the shell. From the fact that animal bait of almost any kind may be used with success in capturing the nautilus, it is probable that this mollusc feeds naturally on almost any animal substance. Apparently it inhabits normally the bottom of the sea, for those taken near the surface are nearly always moribund. The wounds of injured specimens heal at the edges, but without regeneration. Variation was most noticeable in the disposition of certain unsymmetrical organs. Thus the main siphuncular artery may arise from either the left or the right division of the posterior pallial artery. In one instance a *situs inversus* of the reproductive organs was observed, in that the vas deferens was found on the left side instead of on the right and the pyriform gland was on the right, instead of the left. These and many other new observations on the structure and natural history of the nautilus fill the concluding part of the 'Zoological Results' and bear witness to the energy and patience of Dr. Willey as a field zoologist and explorer, even though in the end he was obliged to abandon his quest for the developing eggs of the pearly nautilus.

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#### SCIENTIFIC JOURNALS.

The *Journal of Comparative Neurology* for June contains four leading articles, besides the usual book reviews: (1) 'An Enumeration of the Medullated Nerve Fibers in the Dorsal Roots of the Spinal Nerves of Man,' by Charles Ingbert. There is given a figure of a typical cross section of each dorsal spinal root, with a tabulation of the number of nerve fibers in each fascicle of each root. The total number of medullated nerve fibers in the

dorsal roots of the left side of a large man is 653,627; the total area of the cross sections of these roots is 54.93 sq. mm.; there are on the average 11,900 medullated nerve fibers per sq. mm. of cross-section of these roots. This paper will be followed by a similar enumeration of the ventral roots. (2) 'On the Phylogeny and Morphological Position of the Terminal Buds of Fishes,' by C. Judson Herriek. On both physiological and morphological grounds these organs are to be classed with the taste buds of the mouth cavity and not with either tactile or lateral line organs. (3) 'On the Nature of the Pericellular Network of Nerve Cells,' by Shinkishi Hatai. Supports in general the views of Held that this network is composed of the terminal arborizations of axones of other neurones and concludes that the networks of Golgi and Bethe are of the same type. (4) 'The Neurokeratin in the Medullary Sheaths of the Peripheral Nerves of Mammals,' by Shinkishi Hatai. A new technique brings out the details of the structure of the neurokeratin framework more clearly than has hitherto been done. This substance is arranged in two layers, one beneath the primitive sheath and the other along the axis cylinder, which are connected by bands of neurokeratin which run obliquely from the outer to the inner layer in a funnel-shaped pattern. Neither the outer nor the inner layer is interrupted at the nodes of Ranvier.

THE statement recently quoted in this journal regarding the establishment of the *Journal for Infectious Diseases* to be edited by Professors Ludvig Hektoen and E. O. Jordan is inaccurate. The journal is supported by contributions from Mr. and Mrs. Harold F. McCormick, but no specified sum has been given to endow the journal. It is to be published by the Memorial Institute for Infectious Diseases, not by the University of Chicago.

#### DISCUSSION AND CORRESPONDENCE.

##### THE GRAND GULF FORMATION.

TO THE EDITOR OF SCIENCE: The communication of Dr. Dall on the Grand Gulf forma-